CLAIMS

What is claimed is:

1. A casing bit for drilling a casing section into a subterranean formation, comprising:
a casing bit having an inner profile, an outer profile, and a nose portion;
at least one aperture formed in the nose portion of the casing bit and configured for delivering drilling fluid from an interior of the casing bit to an exterior thereof;
a plurality of generally radially extending blades disposed on the nose portion, wherein at least one of the plurality of blades carries one or more cutting elements affixed thereto; and
at least one gage section, the at least one gage section extending longitudinally from adjacent the nose portion of the casing bit.

2. The casing bit of claim 1, wherein the casing bit comprises steel.

3. The casing bit of claim 1, wherein at least a portion of the outer profile of the casing bit exhibits an inverted cone geometry.

4. The casing bit of claim 1, wherein at least one of the one or more cutting elements are selected from the group consisting of a polycrystalline diamond cutting element, a thermally stable diamond cutting element, a natural diamond cutting element, and a tungsten carbide cutting element.

5. The casing bit of claim 1, wherein:
the one or more cutting elements comprise a first plurality of cutting elements and a second plurality of cutting elements;
the first plurality of cutting elements is configured to initially engage and drill through a selected region; and
the second plurality of cutting elements is configured to engage and drill through a region to be subsequently encountered by the casing bit.

6. The casing bit of claim 5, wherein each of the first plurality of cutting elements comprise a tungsten carbide cutting element and each of the second plurality of cutting elements comprise a polycrystalline diamond cutting element.

7. The casing bit of claim 6, wherein the first plurality of cutting elements exhibits greater exposure than the second plurality of cutting elements.

8. The casing bit of claim 1, further comprising an integral stem section extending longitudinally from the nose portion of the casing bit.

9. The casing bit of claim 8, wherein the integral stem section comprises at least one of a frangible region, a float valve mechanism, a cementing stage tool, a float collar mechanism, or a landing collar structure.

10. The casing bit of claim 1, wherein at least a portion of the casing bit is configured to be drilled therethrough by way of a drilling tool having a drilling profile defined by a drilled surface that would be formed by a full rotation of the drilling tool about a drilling axis.

11. The casing bit of claim 10, wherein at least a portion of at least one of the inner profile and the outer profile of the casing bit substantially corresponds to the drilling profile of the drilling tool.

12. The casing bit of claim 1, wherein at least a portion of the casing bit is configured to fail in response to pressure acting on an interior surface thereof.

13. The casing bit of claim 12, wherein the at least a portion of the casing bit configured to fail is sized and configured to transmit cement therethrough.

14. The casing bit of claim 1, wherein the average distance between the inner profile and the outer profile of the casing bit is selected in relation to a maximum predicted stress, the maximum predicted stress predicted in relation to expected forces of operating the casing bit to drill a casing section into a subterranean formation.

15. The casing bit of claim 14, wherein the casing bit comprises a material having a yield stress that is at least one and one half times the maximum predicted stress.

16. The casing bit of claim 10, wherein the one or more cutting elements comprise a plurality of cutting elements;

wherein a first portion of the plurality of cutting elements is disposed generally within the at least a portion of the casing bit that is configured to be drilled through;

wherein a second portion of the plurality of cutting elements is disposed generally peripheral to the at least a portion of the casing bit that is configured to be drilled through; and

wherein a majority of cutting elements of the first portion is configured differently than a majority of cutting elements of the second portion.

17. The casing bit of claim 16, wherein a size of the majority of the first portion of the plurality of cutting elements is smaller than a size of the majority of cutting elements of the second portion.

18. The casing bit of claim 16,

wherein each of the plurality of cutting elements contains an amount of abrasive material; and

wherein an average amount of the abrasive material contained by each of the cutting elements of the first portion is less than an average amount of the abrasive material contained by each of the plurality of cutting elements of the second portion.

19. The casing bit of claim 16, wherein a majority of the first portion of cutting elements is substantially carbide-free.

20. The casing bit of claim 16, wherein each of the plurality of cutting elements comprises a polycrystalline diamond cutting element.

21. The casing bit of claim 16, wherein at least one of the plurality of cutting elements generally within the at least a portion of the casing bit that is configured to be drilled through comprises a first grade of cutting element relating to at least one inherent quality related to wear characteristics, and at least one of the plurality of cutting elements generally peripheral to the at least a portion of the casing bit that is configured to be drilled through comprises a second grade of cutting element relating to at least one inherent quality related to wear characteristics, wherein the at least one inherent quality of the second grade of cutting element is generally different than the at least one inherent quality of the first grade of cutting element.

22. The casing bit of claim 21, wherein the at least one inherent quality related to wear characteristics of the first grade of cutting element is generally inferior to the at least one inherent quality related to wear characteristics of the second grade of cutting element.

23. The casing bit of claim 16, wherein a majority of the first portion of cutting elements comprises an abrasive selected from the group consisting of carbide, natural diamond, and synthetic diamond, wherein the abrasive is sized and configured to substantially wear away in response to drilling through a selected formation region.

24. The casing bit of claim 1, further comprising one or more wear knots disposed on at least one of the plurality of blades.

25. The casing bit of claim 24, wherein the one or more wear knots are sized and configured to minimize at least one of torque fluctuations while drilling and rate-of-penetration fluctuations while drilling.

26. The casing bit of claim 1, further comprising:

a total bearing area and at least one cutting element secured to a selected portion of the casing bit, the at least one superabrasive cutter exhibiting a limited amount of cutter exposure perpendicular to the selected portion of the face of the casing bit to which the at least one superabrasive cutter is secured to;

wherein the total bearing area of the casing bit is configured to limit a maximum depth-of-cut of the at least one cutting element into the formation during drilling.

27. The casing bit of claim 1, wherein at least a portion of the casing bit comprises an abrasive dispersed within a metal binder.

28. The casing bit of claim 27, wherein the abrasive comprises at least one of carbide, natural diamond, and synthetic diamond.

29. The casing bit of claim 1, further comprising a coating disposed on at least a portion of the exterior of the casing bit.

30. The casing bit of claim 29, wherein the coating is formulated to inhibit adhesion between formation cuttings and the casing bit.

31. The casing bit of claim 30, wherein the coating comprises a polymer.

32. The casing bit of claim 29, wherein the coating is formulated to inhibit at least one of erosion, abrasion, and wear to the casing bit.

33. The casing bit of claim 32, wherein the coating comprises diamond.

34. The casing bit of claim 1, wherein each of the plurality of blades extends generally radially outwardly in a generally spiral fashion from a central axis of the casing bit to the radial outer extent thereof.

35. The casing bit of claim 1, wherein each of the at least one gage sections of each blade extend longitudinally from the nose portion of the casing bit in a generally helical fashion.

36. The casing bit of claim 1, further comprising at least one rotationally trailing groove formed in at least one of the plurality of blades.

37. The casing bit of claim 36, wherein the at least one rotationally trailing groove follows at least one of a tangential path and a circumferential path relative to the direction of rotation of the casing bit.

38. The casing bit of claim 36, wherein the at least one rotationally trailing groove exhibits at least one of a substantially constant width along a direction of rotation of the casing bit and a tapered geometry in which the width of the at least one rotationally trailing groove increases along a direction of rotation of the casing bit.

39. The casing bit of claim 1, wherein the at least one aperture comprises a retention structure.

40. The casing bit of claim 39, further comprising at least one of a nozzle and a sleeve disposed within and affixed to the retention structure.

41. The casing bit of claim 40, wherein at least a portion of the at least one of a nozzle and a sleeve is configured to be removed in relation to an expected amount of erosion.

42. The casing bit of claim 40, wherein the at least one of a nozzle and a sleeve is affixed to the retention structure via at least one of welding, brazing, and engagement of threaded surfaces.

43. The casing bit of claim 40, wherein the at least one of the nozzle and the sleeve comprise one or more of tungsten carbide, ceramic, steel, aluminum, bronze, and brass.

44. The casing bit of claim 40, wherein the at least one of a nozzle and a sleeve is replaceable.

45. The casing bit of claim 1, further comprising at least one rolling cone affixed to the nose portion of the casing bit.

46. The casing bit of claim 10, wherein the one or more cutting elements comprise a plurality of cutting elements;

wherein a first portion of the plurality of cutting elements is disposed generally within the at least a portion of the casing bit that is configured to be drilled through;

wherein a second portion of the plurality of cutting elements is disposed generally peripheral to the at least a portion of the casing bit that is configured to be drilled through; and

wherein at least a majority of the first portion of cutting elements is affixed to the at least one blade of the casing bit differently than at least a majority of the second portion of plurality of cutting elements.

47. The casing bit of claim 46, wherein the at least a majority of the first portion of the plurality of cutting elements is affixed to the at least one blade of the casing bit by an adhesive.

48. The casing bit of claim 46, wherein the at least a majority of the first portion of the plurality of cutting elements is affixed to the at least one blade of the casing bit by a solder.

49. The casing bit of claim 1, wherein the one or more cutting elements is affixed to the at least one of the plurality of blades of the casing bit by an adhesive.

50. The casing bit of claim 1, wherein the one or more cutting elements is affixed to the at least one of the plurality of blades of the casing bit by a solder.

51. The casing bit of claim 46, wherein the at least a majority of the first portion of the plurality of cutting elements is affixed to the at least one of the plurality of blades of the casing bit by electrically disbonding material.

52. The casing bit of claim 51, further comprising:

a conductor extending to and in electrical communication with each of the at least a majority of the first portion of cutting elements affixed to the at least one of the plurality of blades of the casing bit by electrically disbonding material; and

wherein each conductor is electrically insulated from the casing bit.

53. The casing bit of claim 1, wherein the one or more cutting elements is affixed to the at least one of the plurality of blades of the casing bit by electrically disbonding material.

54. The casing bit of claim 53, further comprising:

a conductor extending to and in electrical communication with the one or more cutting elements affixed to the at least one of the plurality of blades of the casing bit by electrically disbonding material;

wherein the conductor is electrically insulated from the casing bit.

55. The casing bit of claim 46, wherein the at least a majority of the first portion of the plurality of cutting elements is affixed to the at least one of the plurality of blades of the casing bit by a fastening element extending therethrough.

56. The casing bit of claim 1, wherein the one or more cutting elements is affixed to the at least one of the plurality of blades of the casing bit by a fastening element extending therethrough.

57. The casing bit of claim 46, wherein each of the at least a majority of the first portion of cutting elements comprises an elongated body having an upper end comprising a cutting element and a lower end configured to extend through a recess formed in the at least one of the plurality of blades of the casing bit, the elongated body being affixed to the at least one of the plurality of blades of the casing bit by way of the lower end thereof.

58. The casing bit of claim 57, the lower ends of the elongated bodies of the at least a majority of the first portion of cutting elements are affixed to the at least one of the plurality of blades of the casing bit by at least one of a threaded element, a weld, a braze joint, and a pin.

59. The casing bit of claim 1, wherein the one or more cutting elements comprises an elongated body having an upper end comprising a cutting element and a lower end configured to extend through a recess formed in the at least one of the plurality of blades of the casing bit, the elongated body of the one or more cutting elements being affixed to the at least one of the plurality of blades of the casing bit by way of the lower end thereof.

60. The casing bit of claim 59, wherein the lower end of the elongated body of the one or more cutting elements is affixed to the at least one of the plurality of blades of the casing bit by at least one of a threaded element, a weld, a braze joint, and a pin.

61. The casing bit of claim 46, wherein the at least a majority of the first portion of cutting elements is affixed to the at least one of the plurality of blades of the casing bit by a braze material exhibiting a liquidus temperature of, at most, about 1305° Fahrenheit.

62. The casing bit of claim 1, wherein the one or more cutting elements is affixed to the at least one of the plurality of blades of the casing bit by a braze material exhibiting a liquidus temperature of, at most, about 1305° Fahrenheit.

63. The casing bit of claim 1, further comprising at least one groove that is sized and configured to preferentially facilitate failure of at least a portion of the casing bit.

64. The casing bit of claim 63, wherein the at least one groove comprises a plurality of grooves sized and configured to preferentially facilitate failure of at least a portion of the casing bit into sections.

65. The casing bit of claim 1, wherein the casing bit comprises one or more fibers disposed within a matrix material.

66. The casing bit of claim 65, wherein the one or more fibers is circumferentially oriented.

67. The casing bit of claim 65, wherein the one or more fibers is oriented concentrically or spirally.

68. The casing bit of claim 1, further comprising at least one sensor for measuring a condition of drilling, a condition of the casing bit, or a formation characteristic.

69. The casing bit of claim 1, wherein the casing bit comprises an outer shell and at least one inner core.

70. The casing bit of claim 69, wherein the outer shell comprises at least one of steel, iron alloys, tungsten carbide powder infiltrated with a copper based binder, and nickel alloys and the at least one inner core comprises at least one of aluminum, brass, bronze, or phenolic.

71. The casing bit of claim 69, wherein the outer shell and the at least one inner core are affixed to one another by at least one of fasteners, welding, and brazing.

72. The casing bit of claim 1, wherein at least a portion of a leading face of a blade of the plurality of blades of the casing bit is formed from a superabrasive material.

73. The casing bit of claim 1, further comprising:

at least one of an incendiary agent, an explosive agent, a reactive chemical, and an abrasive material;

wherein the at least one of an incendiary agent, an explosive agent, a reactive chemical, and an abrasive material is configured to render the casing bit more drillable.

74. The casing bit of claim 1, further comprising an integral stem section including at least one of a float valve mechanism, a frangible region, a cementing stage tool, a float collar mechanism, and a landing collar structure.

75. A casing bit reamer for drilling a casing section into a subterranean formation by enlarging a borehole, comprising:

a pilot section having an inner profile, an outer profile, and a nose portion, the pilot section having a first cutting structure thereon;

wherein the first cutting structure comprises:

a plurality of generally radially extending blades disposed on the nose portion, wherein at least one of the plurality of blades carries one or more cutting elements; and

at least one gage section, the at least one gage section defining a pilot gage diameter;

a reamer section longitudinally adjacent the pilot section comprising a tubular body including a second cutting structure thereon;

wherein the second cutting structure comprises:

a plurality of generally radially extending blades disposed on the tubular body, wherein at least one of the plurality of blades of the second cutting structure carries one or more cutting elements; and

at least one gage section, the at least one gage section of the second cutting structure extending longitudinally from the reamer section and defining a reaming diameter that is larger than the pilot gage diameter.

76. The casing bit reamer of claim 75, wherein at least one of the one or more cutting elements is selected from the group consisting of a polycrystalline diamond cutting element, a thermally stable diamond cutting element, a natural diamond cutting element, and a tungsten carbide cutting element.

77. The casing bit reamer of claim 75, wherein the casing bit reamer is configured as a bicenter reamer.

78. The casing bit reamer of claim 77, wherein at least one blade of the reamer section is expandable.

79. The casing bit reamer of claim 75, wherein the casing bit reamer is configured with the reamer section that is generally centered with respect to the pilot section and the plurality of blades of the reamer section are spaced about a substantial portion of the circumference of the casing bit reamer.

80. The casing bit reamer of claim 79, wherein at least one blade of the reamer section is expandable.

81. The casing bit reamer of claim 75, wherein:

the one or more cutting elements on the plurality of blades of the pilot section comprises a first plurality of cutting elements and a second plurality of cutting elements;

the first plurality of cutting elements is configured to initially engage and drill through a selected region; and

the second plurality of cutting elements is configured to engage and drill through a subsequently encountered region.

82. The casing bit reamer of claim 81, wherein the first plurality of cutting elements exhibits greater exposure than the second plurality of cutting elements.

83. The casing bit reamer of claim 82, wherein each of the first plurality of cutting elements comprises a tungsten carbide cutting elements and each of the second plurality of cutting elements comprises a polycrystalline diamond cutting element.

84. The casing bit reamer of claim 75, wherein at least one blade of the reamer section is expandable.

85. The casing bit reamer of claim 75, wherein at least a portion of the outer profile of the pilot section exhibits an inverted cone geometry.

86. The casing bit reamer of claim 75, wherein at least a portion of the pilot section is configured to be drilled therethrough by way of a drilling tool having a drilling profile defined by a drilled surface that would be formed by a full rotation of the drilling tool about a drilling axis.

87. The casing bit reamer of claim 86, wherein at least a portion of at least one of the inner profile and the outer profile of the pilot section substantially corresponds to the drilling profile of the drilling tool.

88. The casing bit reamer of claim 75, wherein at least a portion of the casing bit reamer is configured to fail in response to pressure acting on an interior surface thereof.

89. The casing bit reamer of claim 88, wherein the at least a portion of the casing bit reamer that is configured to fail is sized and configured to transmit cement therethrough.

90. The casing bit reamer of claim 75, wherein an average distance between the inner profile and the outer profile of the pilot section is selected in relation to a maximum predicted stress, the maximum predicted stress related to expected forces of operating the casing bit reamer to drill a casing section into a subterranean formation.

91. The casing bit reamer of claim 86, wherein the one or more cutting elements on the at least one of the plurality of blades of the pilot section comprises a plurality of cutting elements;

wherein a first portion of the plurality of cutting elements is disposed generally within the at least a portion of the pilot section that is configured to be drilled through;

wherein a second portion of the plurality of cutting elements is disposed generally peripheral to the at least a portion of the pilot section that is configured to be drilled through; and

wherein a majority of the cutting elements of the first portion are configured differently than a majority of the cutting elements of the second portion.

92. The casing bit reamer of claim 91,

wherein each of the plurality of cutting elements contains an amount of abrasive material; and

wherein the amount of abrasive material contained by each of the cutting elements of the first portion of the plurality of cutting elements is less than the amount of abrasive material contained by each of the cutting elements of the second portion of the plurality of cutting elements.

93. The casing bit reamer of claim 91, wherein each of the cutting elements of the first portion of the plurality of cutting elements is substantially carbide-free.

94. The casing bit reamer of claim 91, wherein at least one of the cutting elements generally within the at least a portion of the pilot section that is configured to be drilled through comprises a first grade of cutting element related to at least one inherent quality related to wear characteristics, and at least one of the cutting elements generally peripheral to the at least a portion of the pilot section that is configured to be drilled through comprises a second grade of cutting element related to at least one inherent quality related to wear characteristics, wherein the at least one inherent quality of the second grade of cutting element is generally different than the at least one inherent quality of the first grade of cutting element.

95. The casing bit reamer of claim 94, wherein the at least one inherent quality related to wear characteristics of the first grade of cutting element is generally inferior to the at least one inherent quality related to wear characteristics of the second grade of cutting element.

96. The casing bit reamer of claim 91, wherein each of the cutting elements of the first portion of the plurality of cutting elements comprises an abrasive selected from the group consisting of carbide, natural diamond, and synthetic diamond, wherein the abrasive is sized and configured to substantially wear away in response to drilling through a selected formation region.

97. The casing bit reamer of claim 75, further comprising wear knots disposed on one or more of the plurality of blades of the pilot section and the plurality of blades of the reaming section.

98. The casing bit reamer of claim 97, wherein the wear knots are sized and configured to minimize at least one of torque fluctuations while drilling and rate-of-penetration fluctuations while drilling.

99. The casing bit reamer of claim 75, further comprising:

a total bearing area disposed on the pilot section and at least one cutting element secured thereto, the at least one superabrasive cutter exhibiting a limited amount of cutter exposure perpendicular to the selected portion of the face of the pilot section of the casing bit to which the at least one superabrasive cutter is secured to;

wherein the total bearing area of the pilot section of the casing bit is configured to limit a maximum depth-of-cut of the at least one cutting element into the formation during drilling.

100. The casing bit reamer of claim 75, wherein at least a portion of the casing bit reamer comprises an abrasive dispersed within a metal binder, wherein the abrasive comprises at least one of carbide, natural diamond, and synthetic diamond.

101. The casing bit reamer of claim 75, further comprising a coating disposed on at least a portion of the exterior of the casing bit reamer.

102. The casing bit reamer of claim 101, wherein the coating is formulated to inhibit adhesion between formation cuttings and the casing bit reamer.

103. The casing bit reamer of claim 102, wherein the coating comprises a polymer.

104. The casing bit reamer of claim 101, wherein the coating is formulated to inhibit at least one of erosion, abrasion, and wear to the casing bit reamer.

105. The casing bit reamer of claim 104, wherein the coating comprises at least one of tungsten carbide and diamond.

106. The casing bit reamer of claim 75, wherein each of the plurality of blades of the pilot section extends generally radially outwardly in a generally spiral fashion from a central axis of the pilot section to the radial outer extent thereof.

107. The casing bit reamer of claim 75, wherein each of the at least one gage sections of each blade of the pilot section extends longitudinally away from the nose portion thereof in a generally helical fashion.

108. The casing bit reamer of claim 75, further comprising at least one rotationally trailing groove formed in at least one of the plurality of blades of the pilot section.

109. The casing bit reamer of claim 108, wherein the at least one rotationally trailing groove exhibits one of a tapered geometry in which the width of the at least one rotationally trailing groove increases along a direction of rotation of the casing bit reamer and a constant width along a direction of rotation of the casing bit reamer.

110. The casing bit reamer of claim 75, further comprising at least one aperture in the pilot section configured for delivering drilling fluid from an interior to an exterior thereof, wherein the at least one aperture comprises a retention structure.

111. The casing bit reamer of claim 110, further comprising at least one of a nozzle and a sleeve disposed within and affixed to the retention structure.

112. The casing bit reamer of claim 111, wherein the at least one of the nozzle and the sleeve comprise one or more of tungsten carbide, ceramic, steel, aluminum, bronze, and brass.

113. The casing bit reamer of claim 111, wherein at least a portion of the at least one of a nozzle and a sleeve is configured to be removed in relation to an expected amount of erosion.

114. The casing bit reamer of claim 111, wherein the at least one of a nozzle and a sleeve is affixed to the retention structure via at least one of welding, brazing, and engagement of threaded surfaces.

115. The casing bit reamer of claim 111, wherein the at least one of a nozzle and a sleeve is replaceable.

116. The casing bit reamer of claim 86, wherein the one or more cutting elements on the at least one of the plurality of blades of the pilot section comprise a plurality of cutting elements;
wherein a first portion of the plurality of cutting elements is disposed generally within the at least a portion of the pilot section that is configured to be drilled through;
wherein a second portion of the plurality of cutting elements is disposed generally peripheral to the at least a portion of the pilot section that is configured to be drilled through; and
wherein at least a majority of the first portion of cutting elements is affixed to the at least one blade of the pilot section differently than at least a majority of the second portion of cutting elements.

117. The casing bit reamer of claim 116, wherein each of at least a majority of the first portion of cutting elements is affixed to the plurality of blades of the casing bit reamer by an adhesive.

118. The casing bit reamer of claim 116, wherein each of at least a majority of the first portion of cutting elements is affixed to the at least one blade of the plurality of blades of the casing bit reamer by a solder.

119. The casing bit reamer of claim 75, wherein the one or more cutting elements of the first cutting structure is affixed to the at least one blade of the plurality of blades of the casing bit reamer by an adhesive.

120. The casing bit reamer of claim 75, wherein the one or more cutting elements of the first cutting structure is affixed to the at least one blade of the plurality of blades of the casing bit reamer by a solder.

121. The casing bit reamer of claim 116, wherein at least a majority of the first portion of the plurality of cutting elements is affixed to the at least one blade of the plurality of blades of the casing bit reamer by electrically disbonding material.

122. The casing bit reamer of claim 121, further comprising:
a conductor extending to each cutting element of the first portion affixed to the at least one blade of the plurality of blades of the casing bit reamer by the electrically disbonding material; and
wherein each conductor is electrically insulated from the casing bit reamer.

123. The casing bit reamer of claim 75, wherein the one or more cutting elements of the first cutting structure is affixed to the at least one blade of the plurality of blades of the casing bit reamer by electrically disbonding material.

124. The casing bit reamer of claim 123, further comprising:

a conductor extending to the one or more cutting elements of the first cutting structure affixed to the at least one blade of the plurality of blades of the casing bit reamer by the electrically disbonding material;

wherein the conductor is electrically insulated from the casing bit reamer.

125. The casing bit reamer of claim 116, wherein each of at least a majority of the first portion of cutting elements is affixed to the at least one blade of the plurality of blades of the casing bit reamer by a fastening element extending therethrough.

126. The casing bit reamer of claim 75, wherein the one or more cutting elements of the first cutting structure is affixed to the at least one blade of the plurality of blades of the casing bit reamer by a fastening element extending therethrough.

127. The casing bit reamer of claim 116, wherein each of the at least a majority of the first portion of cutting elements comprises an elongated body having an upper end comprising a cutting element and a lower end configured to extend through a recess formed in the casing bit reamer, the elongated body being affixed to the at least one blade of the plurality of blades of the casing bit reamer by way of the lower end thereof.

128. The casing bit reamer of claim 127, wherein the lower ends of the elongated bodies of the majority of the first portion of cutting elements are affixed to the at least one blade of the plurality of blades of the casing bit reamer by at least one of a threaded element, a weld, a braze joint, and a pin.

129. The casing bit reamer of claim 75, wherein the one or more cutting elements of the first cutting structure comprises an elongated body having an upper end comprising a cutting element and a lower end configured to extend through a recess formed in the casing bit reamer, the elongated body of the one or more cutting elements being affixed to the at least one blade of the plurality of blades of the casing bit reamer by way of the lower end thereof.

130. The casing bit reamer of claim 129, wherein the lower end of the elongated body of the one or more cutting elements of the first cutting structure is affixed to the at least one blade of the plurality of blades of the casing bit reamer by at least one of a threaded element, a weld, a braze joint, and a pin.

131. The casing bit reamer of claim 113, wherein a majority of the first portion of cutting elements is affixed to the at least one blade of the plurality of blades of the casing bit reamer by a braze material exhibiting a liquidus temperature of at most about 1305° Fahrenheit.

132. The casing bit reamer of claim 75, wherein the one or more cutting elements is affixed to the at least one blade of the plurality of blades of the casing bit reamer by a braze material exhibiting a liquidus temperature of at most about 1305° Fahrenheit.

133. The casing bit reamer of claim 75, further comprising at least one groove that is sized and configured to preferentially facilitate failure of at least a portion of the casing bit reamer.

134. The casing bit reamer of claim 133, wherein the at least one groove comprises a plurality of grooves sized and configured to preferentially facilitate failure of at least a portion of the casing bit reamer into sections.

135. The casing bit reamer of claim 75, wherein at least the pilot section of the casing bit reamer comprises one or more fibers disposed within a matrix material.

136. The casing bit reamer of claim 135, wherein the one or more fibers is circumferentially oriented.

137. The casing bit reamer of claim 135, wherein the one or more fibers is oriented concentrically or spirally.

138. The casing bit reamer of claim 75, further comprising at least one sensor for measuring a condition of drilling, a condition of the casing bit reamer, or a formation characteristic.

139. The casing bit reamer of claim 75, wherein the pilot section comprises an outer shell and an inner core.

140. The casing bit reamer of claim 139, wherein the outer shell and the inner core are affixed to one another by at least one of fasteners, welding, and brazing.

141. The casing bit reamer of claim 139, wherein the outer shell comprises at least one of steel, iron alloys, tungsten carbide powder infiltrated with a copper based binder, and nickel alloys, and the inner core comprises at least one of aluminum, brass, bronze, or phenolic.

142. The casing bit reamer of claim 75, wherein at least a portion of a leading face of a blade of at least one of the pilot section and the reaming section of the casing bit reamer is formed from a superabrasive material.

143. The casing bit reamer of claim 75, further comprising:

at least one of an incendiary agent, an explosive agent, a reactive chemical, and an abrasive material;

wherein the at least one of an incendiary agent, an explosive agent, a reactive chemical, and an abrasive material is configured to render the pilot section of the casing bit more drillable.

144. A cutting element for use in a casing bit configured to drill a casing section into a subterranean formation comprising:

a substrate; and

an abrasive volume forming at least a portion of a cutting face;

wherein at least a portion of a side surface of the abrasive volume is bonded to the substrate;

wherein the abrasive volume is configured to be substantially removed from the cutting element in response to drilling subterranean formation.

145. The cutting element of claim 144, wherein the abrasive volume comprises at least one of diamond, ceramic, boron nitride, impregnated material, hardfacing material, and carbide.

146. The cutting element of claim 144, wherein the abrasive volume has a geometry of one of a circular sector, a generally circular shape, and a partially rectangular shape.

147. The cutting element of claim 144, wherein the substrate surrounds the entire side surface of the abrasive volume.

148. A cutting element for use in a casing bit configured to drill a casing section into a subterranean formation comprising:
an abrasive volume forming at least a portion of a cutting face;
a substrate that is substantially free of carbide.

149. The cutting element of claim 148, wherein the substrate comprises at least one of steel, tungsten, TZM, molybdenum, bronze, brass, aluminum, or ceramic.

150. A cutting element for use in a casing bit configured to drill a casing section into a subterranean formation comprising:
a substrate; and
an abrasive volume forming at least a portion of a cutting face;
wherein the abrasive volume is configured to be substantially removed from the cutting element in response to drilling subterranean formation.

151. The cutting element of claim 150, wherein the abrasive volume comprises a portion of the substrate.

152. The cutting element of claim 150, wherein the abrasive volume is configured to be substantially removed by wearing away in response to drilling a selected region of subterranean formation.

153. The cutting element of claim 150, wherein the abrasive volume is configured to be removed by one or more of mechanical, thermal, or chemical degradation.

154. A method of forming a borehole, comprising:

providing a casing bit configured for drilling a subterranean formation and having an inner region that is configured for drilling therethrough;

selecting at least one superabrasive cutting element within the inner region;

affixing the at least one superabrasive cutting element within the inner region containing at least one of carbide or diamond;

affixing the casing bit to a casing section;

forming a borehole by rotating the casing section affixed to the casing bit and engaging a subterranean formation with the casing bit;

substantially removing the at least one of diamond and carbide; and

drilling through the casing bit with a drilling tool.

155. The method of claim 154, wherein substantially removing the at least one of diamond and carbide comprises wearing away the at least one of diamond and carbide in response to drilling a selected region of subterranean formation.

156. The method of claim 154, wherein substantially removing the at least one of diamond and carbide comprises degrading the at least one of diamond and carbide by one or more of mechanical, thermal, or chemical interaction.

157. A method of cementing a casing within a borehole, comprising:
providing a casing bit affixed to a casing section;
forming a borehole by rotating the casing section affixed to the casing bit;
causing a portion of the casing bit to fail to create an aperture therethrough; and
flowing cement through the aperture.

158. A method of cementing a casing within a borehole, comprising:
providing a casing bit affixed to a casing section;
forming a borehole by rotating the casing section affixed to the casing bit;
causing a portion of the casing section to fail to create an aperture therethrough; and
flowing cement through the aperture.

159. A drilling assembly for drilling two or more casing sections into a subterranean formation comprising:
at least two casing bits of different diameter affixed to respective casing sections of different diameter;
wherein radially adjacent casing sections are selectively releasably affixed to one another; and
wherein the at least two casing bits and the casing sections are arranged in a telescoping relationship.

160. The drilling assembly of claim 159, wherein the radially adjacent casing sections are affixed to one another by way of shear pins.

161. The drilling assembly of claim 159, wherein one or more casing bits of the at least two casing bits are disposed at least partially within one or more other casing bits of the at least two casing bits in a telescoping relationship.

162. The drilling assembly of claim 159, wherein one or more smaller casing bits of the at least two casing bits are configured to drill through at least another larger casing bit of the at least two casing bits.

163. A drilling assembly for drilling two or more casing sections into a subterranean formation comprising:

at least two casing sections of different diameter disposed in a telescoping relationship;

wherein radially adjacent casing sections are selectively releasably affixed to one another;

a drilling tool disposed at a longitudinally preceding end of the at least two casing sections, in relation to an intended direction of drilling;

wherein the drilling tool is sized and configured to drill a diameter exceeding a largest diameter of the at least two casing sections of different diameter.

164. The drilling assembly of claim 163, wherein the radially adjacent casing sections are affixed to one another by way of shear pins.

165. The drilling assembly of claim 163, wherein the drilling tool comprises at least one of a rotary drill bit, a reamer, and a reaming assembly operably coupled to the innermost of the at least two casing sections.

166. The drilling assembly of claim 163, further comprising a motor disposed longitudinally between and coupled to the drilling tool and the innermost of the at least two casing sections.

167. The drilling assembly of claim 163, wherein the drilling tool comprises a casing bit operably coupled to the innermost of the at least two casing sections.

168. A drilling assembly for drilling a casing section into a subterranean formation comprising:

a casing bit affixed to a casing section;

a chamber configured to selectively deliver a substance in proximity to the casing bit; and

wherein the substance is configured to render the casing bit more drillable.

169. The drilling assembly of claim 168, wherein the substance comprises at least one of an incendiary agent, an explosive agent, an acid, and an abrasive material.

170. The drilling assembly of claim 168, wherein the chamber is configured to be punctured to selectively deliver the substance in proximity to the casing bit.

171. The drilling assembly of claim 168, further comprising a piston element that is configured to reduce a size of the chamber to expel the substance therefrom.

172. The drilling assembly of claim 171, wherein the piston element is configured to reduce the size of the chamber by failing one or more frangible elements responsive to force developed by drilling fluid flow through an orifice in excess of a selected drilling fluid flow magnitude.

173. The drilling assembly of claim 171, wherein the piston element is configured to reduce the size of the chamber in response to an actuation element interacting with the piston element.

174. The drilling assembly of claim 173, wherein the actuation element is a ball disposed within the interior of the casing section configured to move downwardly therein and to cause the size of the chamber to be reduced.

175. A drilling assembly for drilling a casing section into a subterranean formation comprising:
a casing bit affixed to a casing section;
at least one destructive element configured to render the casing bit more drillable.

176. The drilling assembly of claim 175, wherein the at least one destructive element comprises at least one of an incendiary agent and an explosive agent.

177. The drilling assembly of claim 175, further comprising an ignition device configured to ignite the at least one of an incendiary agent and an explosive agent.

178. The drilling assembly of claim 175, wherein the ignition device is configured to ignite the at least one of an incendiary agent and an explosive agent in response to mud pulse telemetry.

179. A casing bit for drilling a casing section into a subterranean formation, comprising:
a casing bit having an inner profile, an outer profile, and a nose portion;
at least one aperture formed in the nose portion of the casing bit and configured for delivering drilling fluid from an interior of the casing bit to an exterior thereof;
a plurality of discrete cutting element retention structures disposed on the nose portion, wherein each discrete cutting element retention structure is configured to carry a cutting element; and
at least one gage section, the at least one gage section extending longitudinally from adjacent the nose portion of the casing bit.

180. A casing bit for drilling a casing section into a subterranean formation, comprising:
a casing bit having an inner profile, an outer profile, and a nose portion;
at least one aperture formed in the nose portion of the casing bit and configured for delivering drilling fluid from an interior of the casing bit to an exterior thereof;
a plurality of cutting elements affixed to the nose portion, configured for causing failure in the formation by contact therewith; and
at least one gage section, the at least one gage section extending longitudinally from adjacent the nose portion of the casing bit.

181. The casing bit of claim 180, further comprising an integral stem section extending longitudinally from the nose portion of the casing bit.

182. The casing bit of claim 181, wherein the integral stem section comprises at least one of a frangible region, a float valve mechanism, a cementing stage tool, a float collar mechanism, or a landing collar structure.

183. The casing bit of claim 180, wherein the outer profile comprises a substantially symmetrical profile, with respect to a longitudinal axis of the casing bit.

184. The casing bit of claim 180, wherein the plurality of cutting elements comprises polycrystalline diamond stud-type cutting elements.

185. The casing bit of claim 180, wherein the plurality of cutting elements comprises percussion inserts.

186. The casing bit of claim 185, wherein the percussion inserts comprise at least one of cemented tungsten carbide and diamond.

187. A method for removing cutting elements from a casing bit, the method comprising:
drilling a casing bit having a plurality of cutting elements affixed thereto by way of braze material into a subterranean formation to form a borehole; and
heating the braze material to a sufficient temperature, while the casing bit is within the borehole, to substantially weaken the affixation of the plurality of cutting elements affixed therewith.

188. A method for removing cutting elements from a casing bit, the method comprising:
drilling a casing bit having a plurality of cutting elements affixed thereto by way of an electrically disbonding material into a subterranean formation; and
causing electric current to flow through the electrically disbonding material to substantially weaken the affixation of the plurality of cutting elements affixed therewith.